

Etiology of Jaundice

Jaundice is a problem of **bilirubin production** (hemolysis), **conversion** (liver disease, acute or chronic), or **excretion** (obstruction). These are covered in depth in the medicine topics. In surgery it's important to recognize the laboratory findings (production: ↑ unconjugated bilirubin only; conversion: ↑ unconjugated bilirubin and LFTs; obstruction: ↑ conjugated bilirubin and LFTs and Alk Phos, and Pancreatic Enzymes) and know the difference between **Viral** (AST and ALT in the 1000s) and **EtOH Hepatitis** (AST:ALT > 1.5). The rest is the topic at hand - obstructive jaundice.

Obstructive Jaundice

When the biliary tree is blocked the liver does what it's supposed to do: conjugate bilirubin. There will be an **elevated conjugated bilirubin** in obstructive jaundice. That means it's water-soluble; it will be **excreted in the urine** turning it the color of bilirubin (making **dark urine**). The stool will lose its pigment (**clay colored stools**). Other signs of obstruction may be present (**pruritus** or **icterus**, for example) but the patient is going to be yellow (**jaundice**). The decision is if it is an acute **inflammatory** process or a chronic **malignant** one. The first step is in the physical exam. A **palpable, nontender gallbladder** generally means a cancer (the gall bladder produces fluid but there's nowhere for it to go, so it just blows up like a balloon). A **tender gallbladder** (Murphy's Sign) is indicative of an inflammatory process, cholecystitis, making the likely culprit a stone. The next step is an **Ultrasound**: a **thin walled, dilated** gallbladder walls free of inflammation with a distal obstruction (cancer), while a **thick-walled rigid (porcelain)** gallbladder is from chronic inflammation. In addition, it might even be possible to **see the stones** in the gallbladder (but rarely, if ever, the offending stone).

Cholelithiasis and Cholangitis (see gallbladder lecture)

If there's a stone in the common bile duct, there's no time for the biliary tree to adapt. **Mild dilation of ducts on ultrasound**, gallstones in the gallbladder (you rarely see the gallstones in the duct), and jaundice will be seen. If **nontoxic** (choledoco) get an MRCP to confirm, then ERCP to treat. If **toxic** (cholangitis) give antibiotics and skin MRCP for ERCP first.

Cancer

There are three tumors that can present with **painless jaundice**, a **palpable gallbladder**, and usually **weight loss**. ¹**Pancreatic cancer** (adeno from the head of pancreas strangles the biliary tree) is diagnosed with an EUS with biopsy; it requires a **Whipple** procedure (pancreato-duodeno-jejunostomy) to treat. It carries a dismal prognosis. ²**Cholangiocarcinoma** (cancer of the duct itself) can be the source of obstruction, which would be diagnosed on **ERCP with Bx** and is capable of ruling out a stricture. ³**Ampulla of Vater cancer**, which can bleed into the GI lumen, presents with an FOBT+ but with a -Colonoscopy. **START WITH AN MRCP** which should always precede the biopsy test (either ERCP or EUS). CT scans are still used to stage lesions and **surgical resection** is usually the treatment. **Migratory thrombophlebitis** (described as palpation of "rigid cords" of superficial veins that come and go) is essentially pathognomonic for pancreatic cancer.

	<i>Malignant</i>	<i>Obstructive</i>
Physical Exam	Palpable nontender Gallbladder	Tender Gallbladder
Ultrasound	Thin-Walled Distended Gallbladder	Thick-Walled rigid gallbladder
Stones	Ø Stones	⊕ Stones
Diagnosis	MRCP then ERCP or EUS = Bx CT scan stage	ERCP
Treatment	Surgery	ERCP

